DELPHI Technical Presentation

Technical Requirements and Strategies

DELPHI

Presented to the DOT FMC and IRMAC

Washington, DC

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DELPHI Technical Presenters

▌ DELPHI Technical Direction

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▌ DELPHI Technical Infrastructure

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▌ DELPHI Conversion and Interfaces

  ▌ Troy Stewart, DELPHI Conversion and Interface Lead

Agenda

- **Technical Directions for DELPHI**
  - Guiding Principles
  - COTS Solution
- **Technical Infrastructure**
  - Technical Architecture
  - Technical Infrastructure Requirements
- **Conversion and Interfaces**
  - Methodology
  - Strategy

DELPHI

Technical Directions

DELPHI Guiding Principles

- DELPHI Mandate
  - DAFIS will not be replicated
  - DELPHI will enable reengineering business processes
  - DELPHI will not customize Oracle Financials software
- Maximize Productivity of the DELPHI Users
- Utilize Leading Edge Technologies
  - Browser technology
  - Centralized application and database servers
  - Low bandwidth telecommunication requirements

COT's Solution

Oracle Applications
a comprehensive, global business solution

▌ Oracle Applications

  ▌ Oracle Financials Release 11 Federal Extensions Version 3.0

     General Ledger, Payables, Receivables, Assets, Purchasing, Grants Management, and Projects

  ▌ Oracle Discoverer

  ▌ Oracle Financial Analyzer

  ▌ Application Desktop Integration Tools

  ▌ Oracle Application Data Warehouse

DELPHI
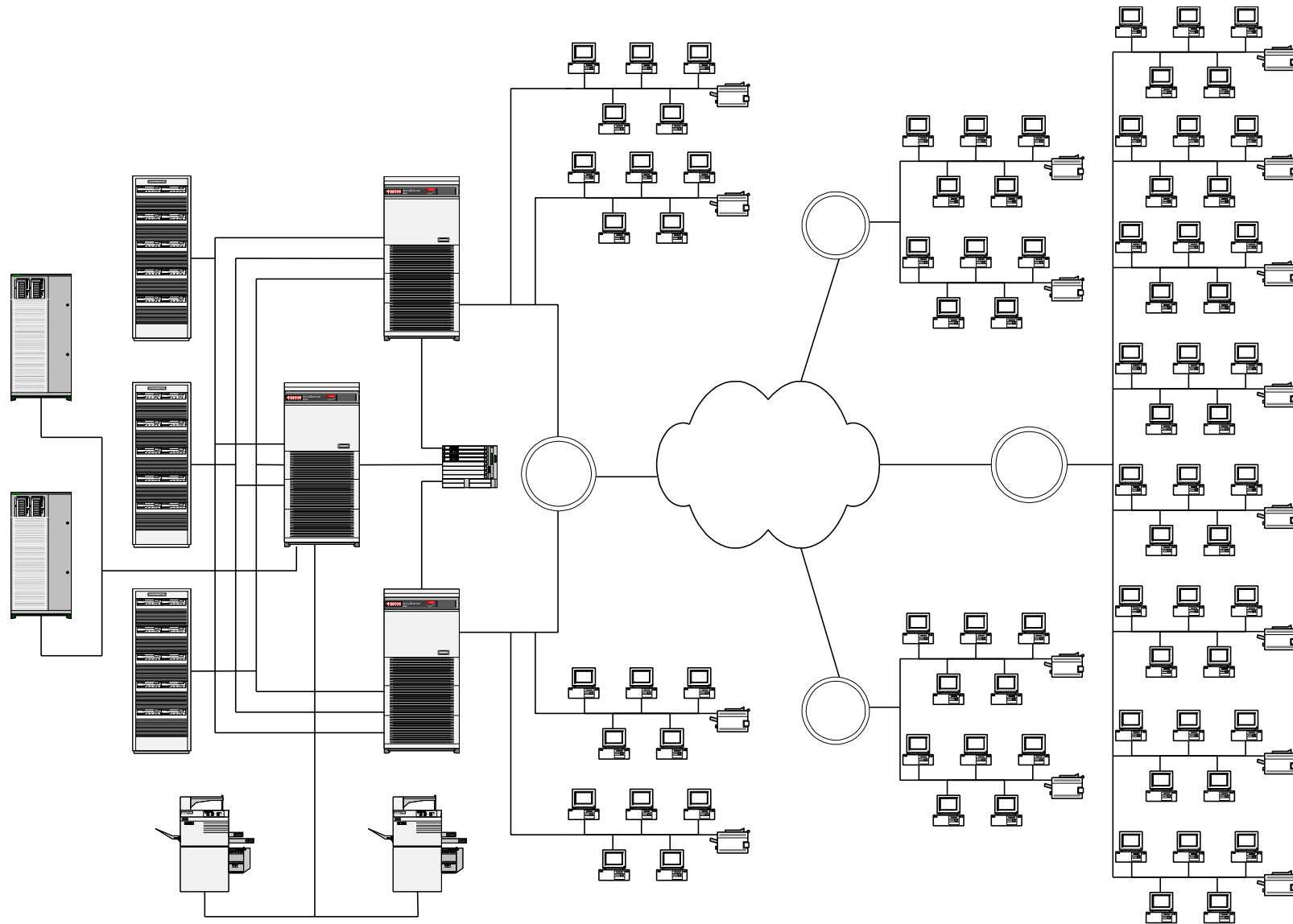
Technical Infrastructure Requirements

Agenda

- **Technical Infrastructure Determinants**
    - DELPHI System Assumptions
    - Technical Architecture Assumptions
- **Technical Architecture**
    - Three Tier Architecture
    - High Availability
- **Technical Infrastructure Requirements**
    - Centralized Server Requirements
    - OA Requirements
    - Telecommunication Requirements

DELPHI Technical Infrastructure

DELPHI TI Mission: Enablement

▌ Build a DELPHI Technical Infrastructure that will *Enable*:

▌ DOT operating administrations to use DELPHI efficiently

▌ DOT to practice sound financial management

▌ The DELPHI project to deliver the targeted functionality

TI Requirements: User Support

- **DELPHI Users**
  - Who?
  - How many?
  - Where?
  - What?
  - What access?
- *Consideration*
  - Platform requirements
  - Corporate support

DELPHI Users

- **Classes of Users**
  - High volume data entry
  - Certification and maintenance (light data entry)
  - Decision support
  - Online complex processing
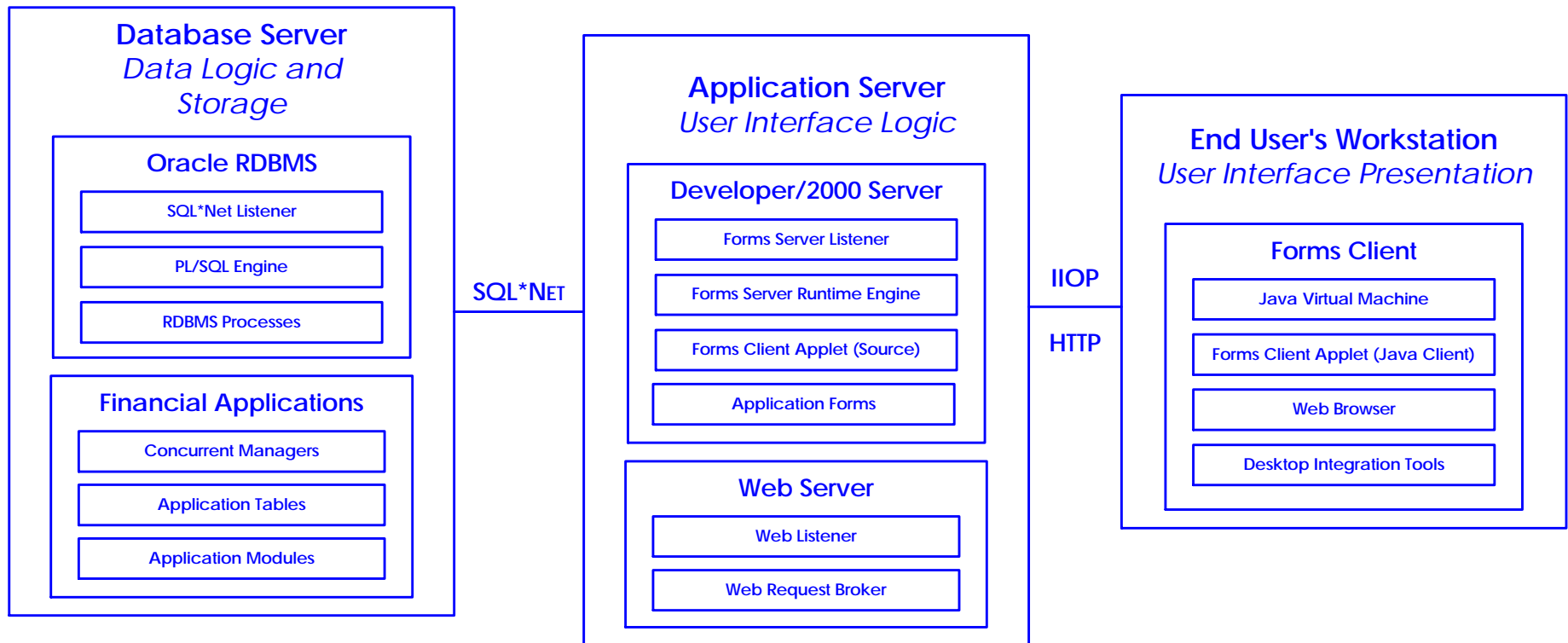 - Batch processing
  - Interfaces

TI Requirements: DOT Volumes

- Financial Data
  - Financial transactions
  - Interfaces
  - Online data
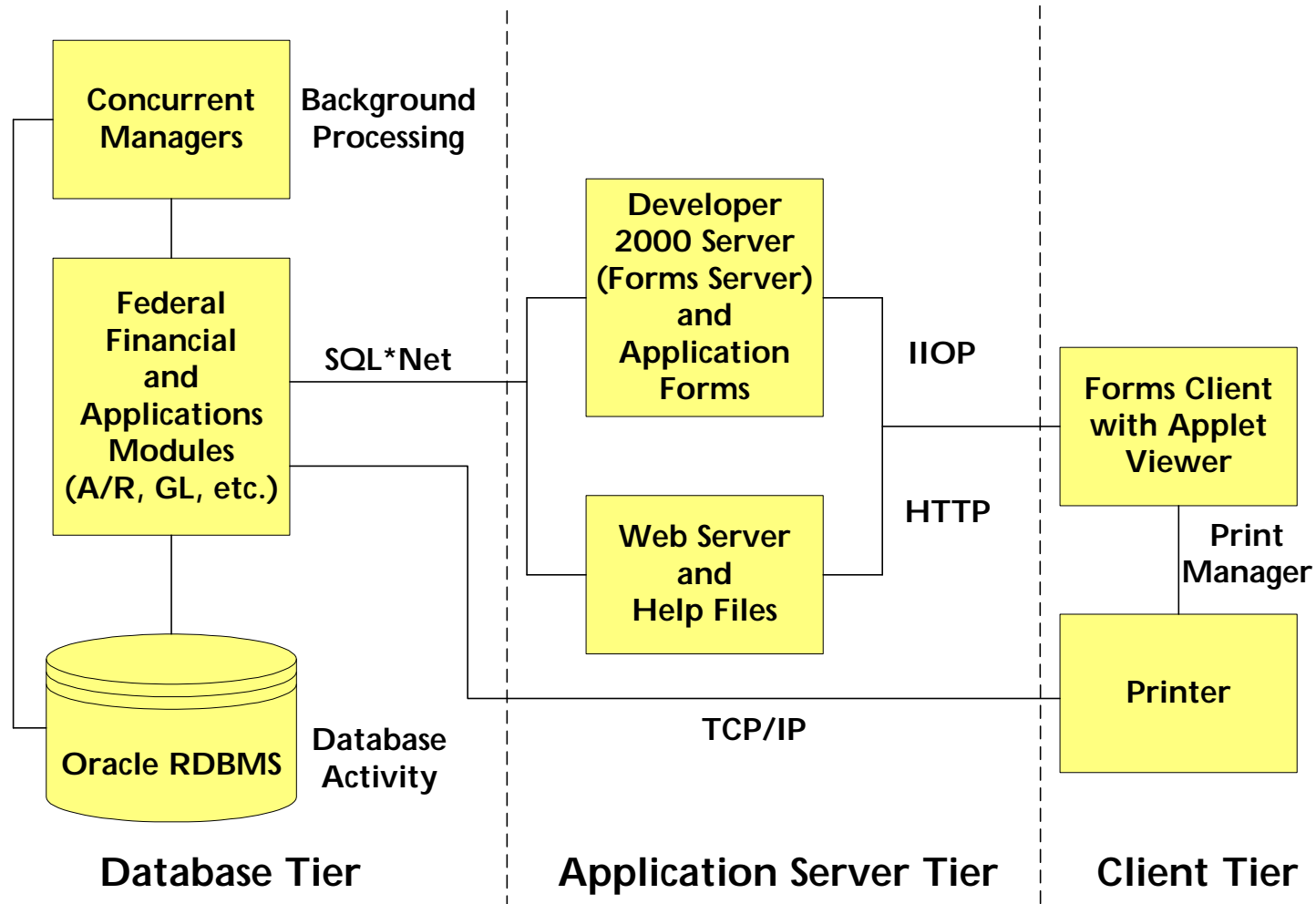 - Decision support
  - Reporting
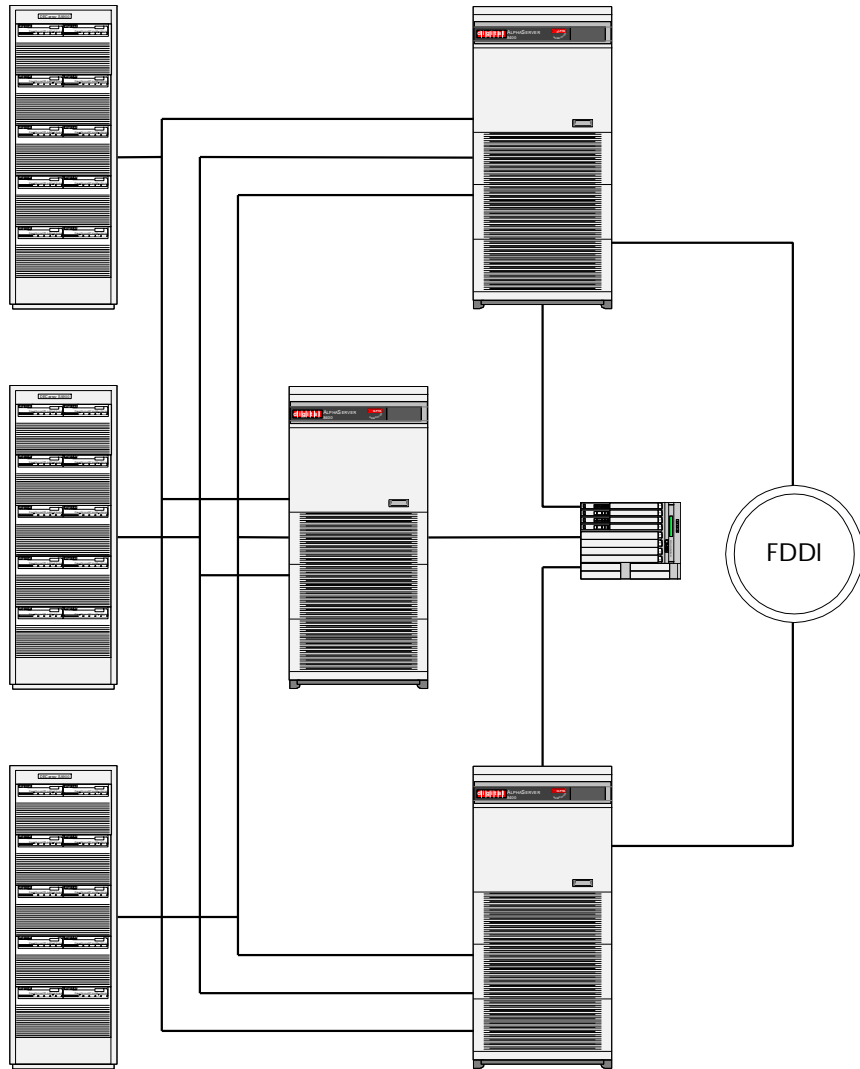 - Mass edits
- Users
  - Online entry
  - Query

Oracle Financials Internet Architecture

Database Server
Data Logic and Storage

Oracle RDBMS

- SQL*Net Listener
- PL/SQL Engine
- RDBMS Processes

Financial Applications

- Concurrent Managers
- Application Tables
- Application Modules

SQL*NET

Application Server
User Interface Logic

Developer/2000 Server

- Forms Server Listener
- Forms Server Runtime Engine
- Forms Client Applet (Source)
- Application Forms

Web Server

- Web Listener
- Web Request Broker

IIOP

HTTP

End User's Workstation
User Interface Presentation

Forms Client

- Java Virtual Machine
- Forms Client Applet (Java Client)
- Web Browser
- Desktop Integration Tools

NCA Technical Architecture

Concurrent Managers — Background Processing

Federal Financial and Applications Modules (A/R, GL, etc.) — SQL*Net

Developer 2000 Server (Forms Server) and Application Forms — IIOP

Web Server and Help Files — HTTP

Forms Client with Applet Viewer

Print Manager

Oracle RDBMS — Database Activity

Printer

TCP/IP

Database Tier | **Application Server Tier** | **Client Tier**

DELPHI Availability Requirements

- Scheduled availability
  - Monday through Saturday
  - 5:00 a.m. to 8:00 p.m. Central Time
- System availability 99.9%
  - Less than 5 hours downtime per year during scheduled availability
  - Less than 2 minute restoration of service following unscheduled downtime
- Application and web server availability 99.99%
  - Less than 30 minutes downtime per year during scheduled availability

DELPHI Availability Requirements
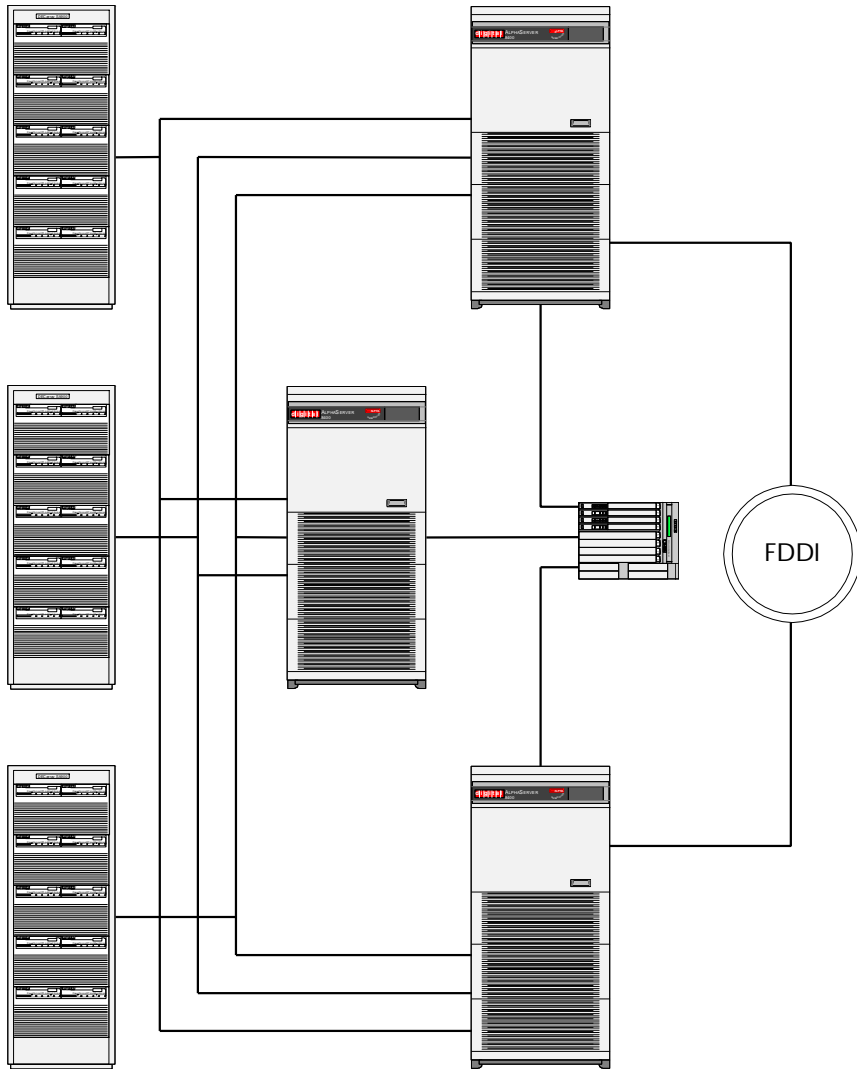
- Elimination of *single points of failure*
  - Redundancy for
    - Clustered systems
    - RAID storage with hot spares
    - Power sources
    - Power supplies
    - Controllers
    - Network interfaces
    - SCSI interfaces
- UPS for all server components
- Controller battery backup

DELPHI Performance Assumptions

- Initial user base: 2,500
- Concurrent Users: 750
- Growth factor: 5% per year (after first year)
- Response time: < 10 seconds
- System utilization: < 80%
- Server to server messaging: 100 Megabits (potential for 100 Megabytes by using clustering)

Database Tier Requirements
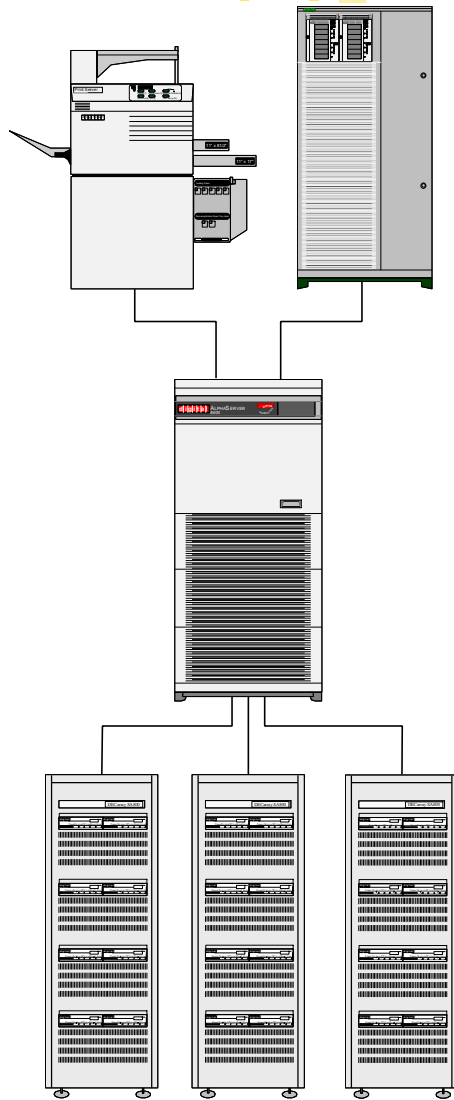
- < 10 seconds response time
- 750 concurrent users
- 15,665 transactions/minute
- 48 GB/Hr backup rate
- 1,050 GB production storage
- High-volume print
- < 2 minute system fail-over capability
- Elimination of single points of failure

Application/Web Server Requirements
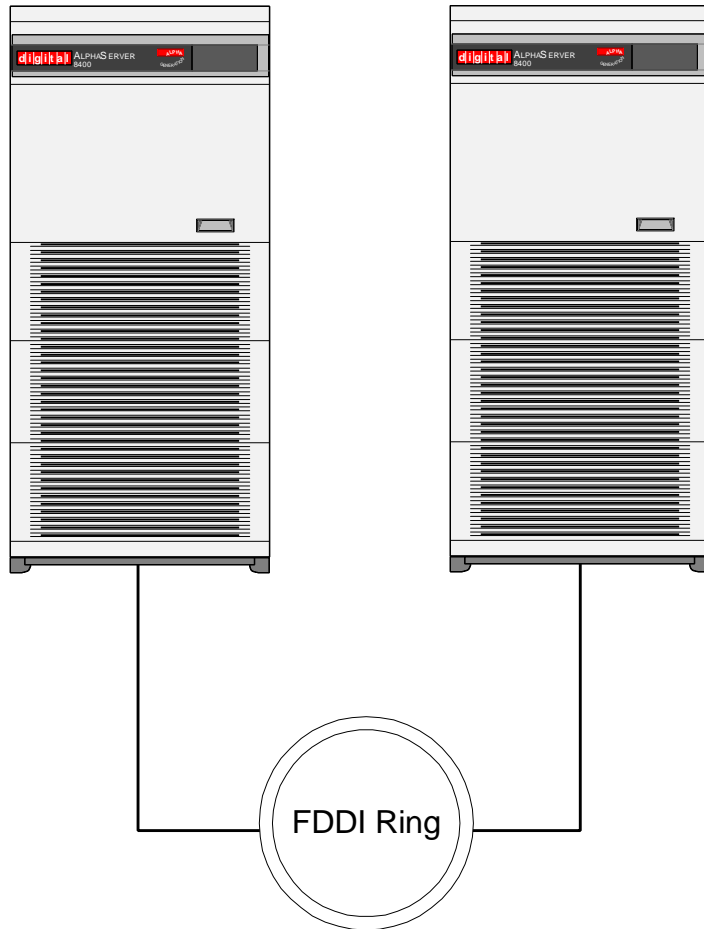
- < 10 seconds response time
- 750 concurrent users
- 2,100 SPECrate_int95
- 100 megabit throughput to database server
- 16 GB RAID storage
- 2-4 KBPS/sec/user average network throughput
- Load balancing and redundancy for forms server
- Fail-over service for the database server

FDDI Ring

DELPHI Storage Requirements
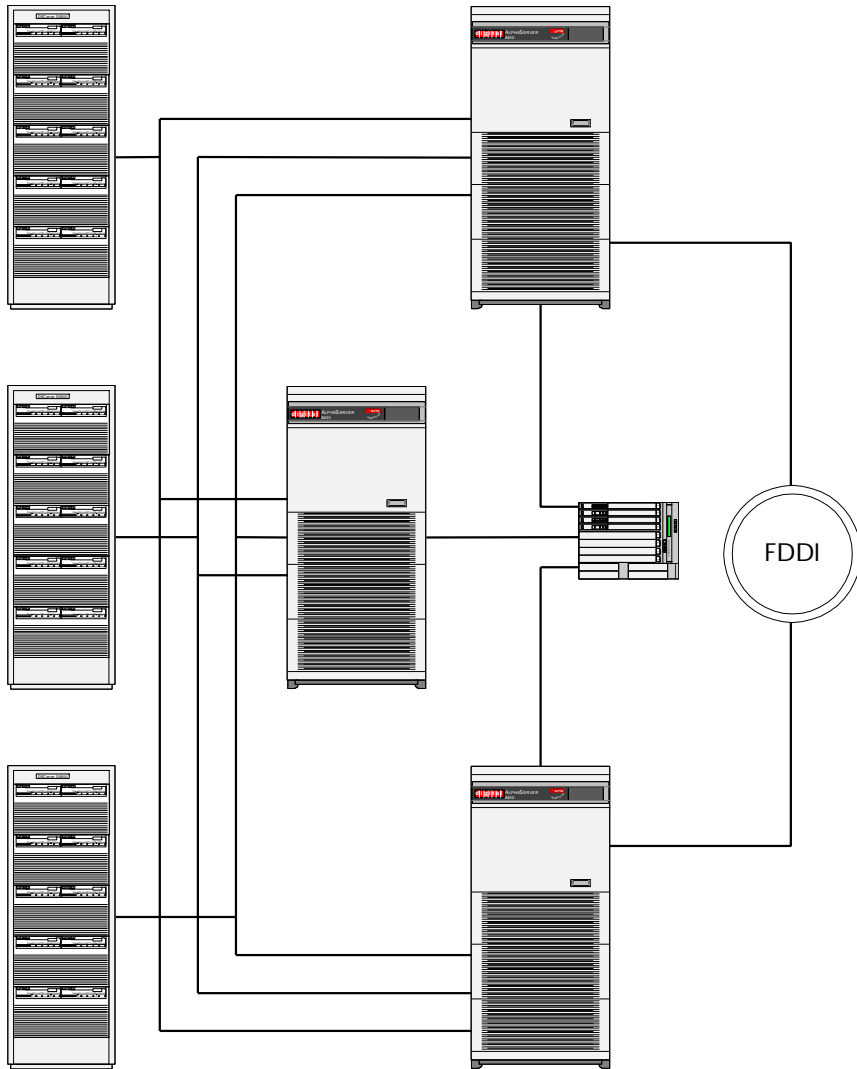
- 1.5 terabytes (RAID and cloning)
- < 0.013 second disk access time
- 15 MB/sec disk transfer rate
- *Write-back* and *Write-through* cache
- 75% controller cache efficiency
- 4,000 MB/sec controller I/O rate
- 28 MB/sec data transfer between hosts and storage
- 0, 1, 5 RAID capability
- 1/24 hot spare ratio
- Support for clustering (access to shared storage services)

DELPHI Client Platforms Requirements
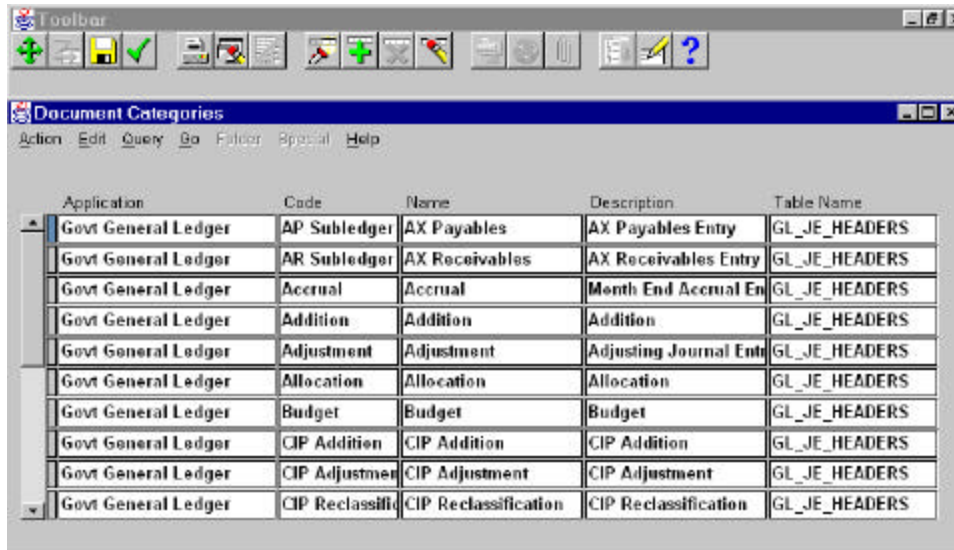
- 32-bit OS (Windows NT, 2000, '95, or '98)

- 200+ MHz Pentium CPU

- 64 MB Memory

- 1024 X 768 resolution

- Web browser

- Applet viewer or JInitiator

- Desktop tools

- This represents today's average desktop system with one to two years to deploy for DELPHI implementation.

NCA - Thin client computing

- **Java Display Services**
  - Client/server GUI look and feel
  - Same forms as provided by SmartClient software
  - No costly system administration and software distribution (thin client requirements)
  - Low network bandwidth requirement

DELPHI Telecommunications
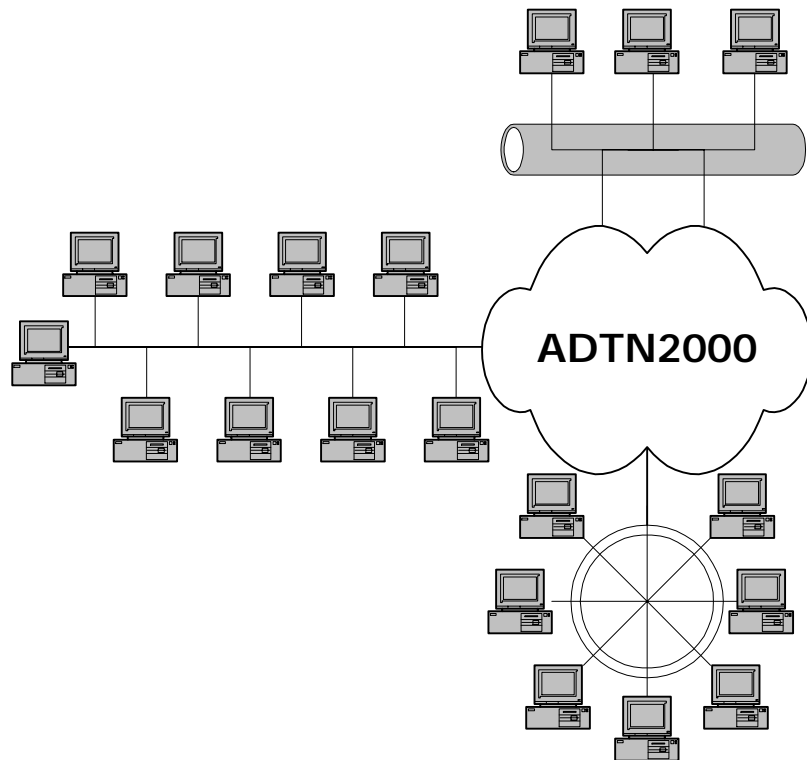
ADTN2000

▍ DOT Network Infrastructure

▍ ADTN2000 Wide Area Network

▍ DOT's IDN

▍ Campus backbones

▍ Local Area Networks

▍ *Bonus*

▍ Low NCA bandwidth requirements

OA Telecommunication Requirements

- Workstation access to the DOT intranet
- Web Browser capabilities
- Internet protocols and utilities
  - TCP/IP for workstations
  - HTTP/IIOP functionality
  - FTP for interfaces to DELPHI
  - SQL*Net for interfaces from DELPHI
  - SQL*Net for decision support system tools that are not web-enabled
- Internet mail capability for alerts and messages
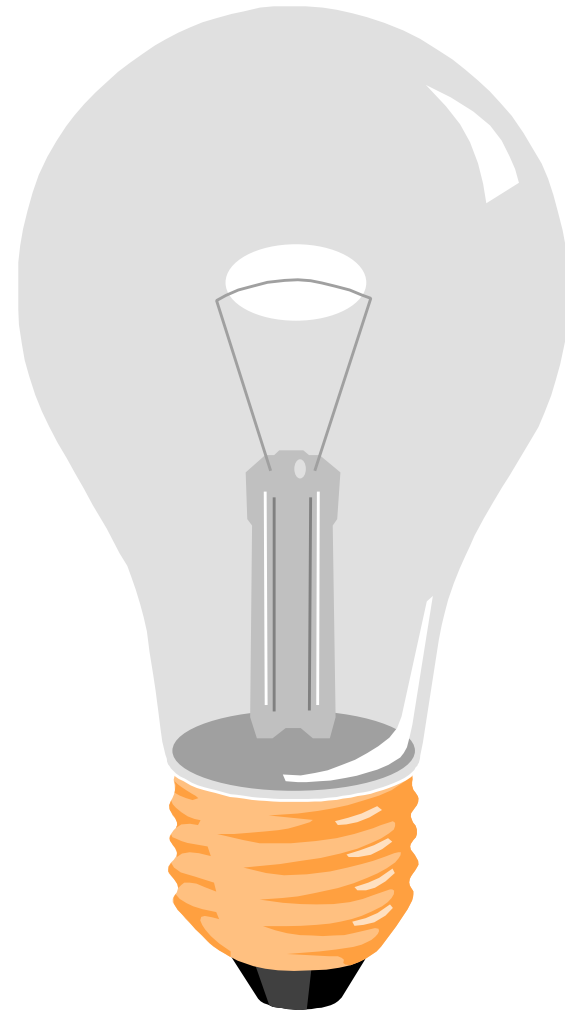- Internet addressable printers

DELPHI

Conversion and Interfaces

Agenda
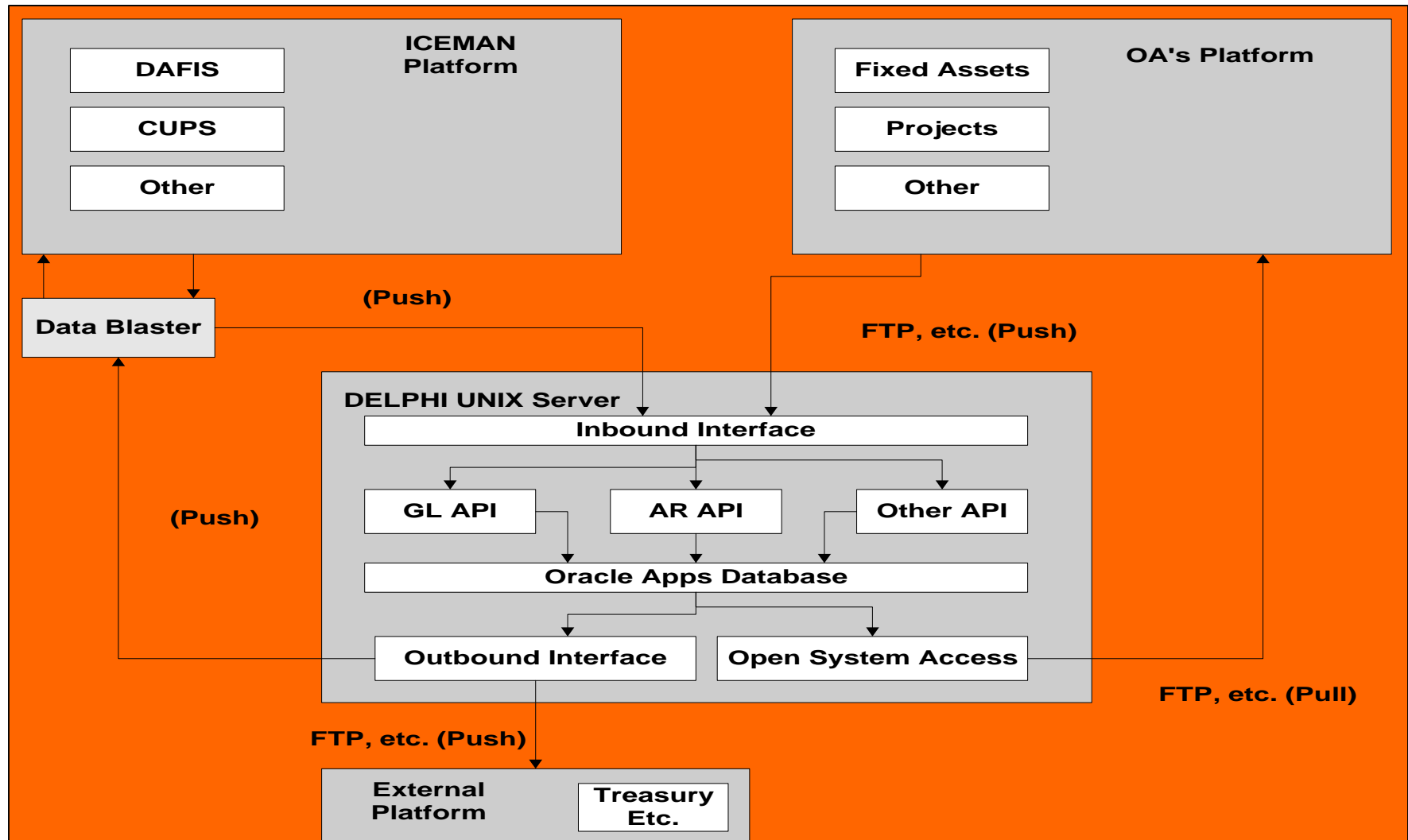
Conversion

Interfaces

Testing
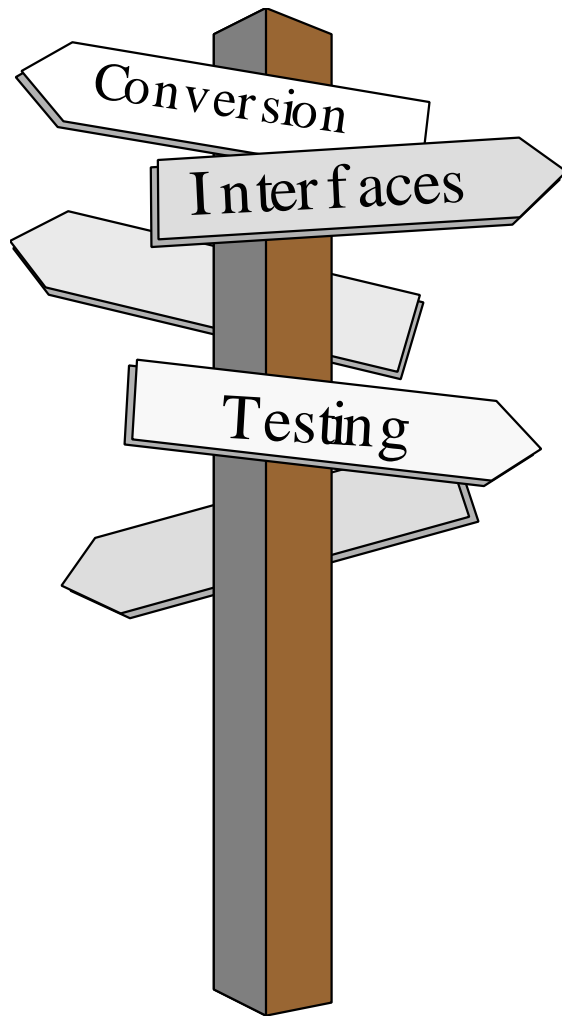
- Environment
- Data Flow
- Conversions
- Interfaces

Environment

- Natural and/or COBOL extraction on ICE-MAN
- Channel-attached Datablaster
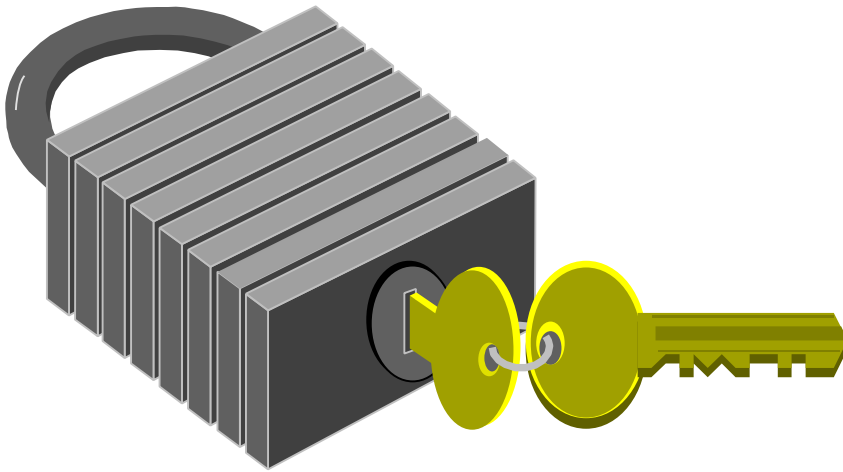- SmartDB Workbench
- Oracle APIs
- IP Connectivity

Data Flow

Conversions

- DAFIS Legacy Data
- OA Legacy Data
  - Fixed Assets
  - Projects
  - Etc.

Conversion Methodology - DAFIS Legacy

- Identify Business Objects
- Map Legacy Data to Oracle Applications
- Design Components
- Build Components
- Unit Test
- Scrub Data (OA Involvement)
  - FRA Target Date - September 1999
  - Other OA's - TBD
- System Test (OA Involvement)
  - FRA Target Date - TBD
- Validate Data (OA Involvement)
- Convert Data (OA Involvement)
- Production

OA Legacy Conversion Steps

- Develop API Requirements (DELPHI)
- Coordinate API Requirements (OA / DELPHI)
  - FRA Target Date - July 1999
  - Other OA's - TBD
- Design / Build Components (OA)
  - Assumption - 13 weeks / Object
- Test Modules (OA / DELPHI)
  - Minimum - 4 weeks / Object
- Convert Data (OA / DELPHI)
- Production
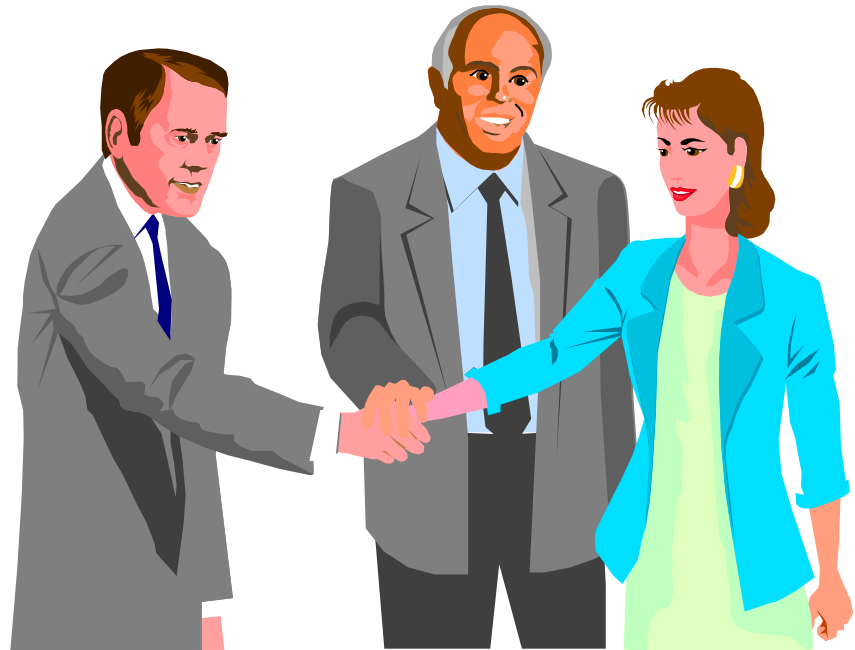
Interfaces

- Global Interfaces
- OA Interfaces
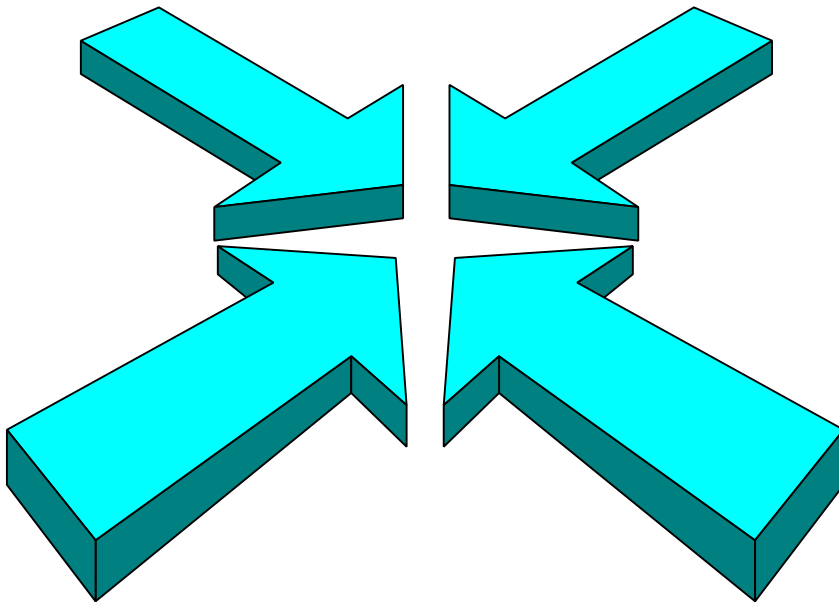
Global Interfaces

- Developed by DELPHI
  - CUPS Payroll
  - CUPS Travel Offset
  - CUPS Third Party Pay
  - Nations Bank Credit Card
  - GPO Billing
  - GSA Supply Billing
  - GSA Motor Pool Billing
  - US Treasury Financial Organization Directory
  - Labor Distribution

Global Interfaces (cont'd)

❚ Delivered by Oracle

  ❚ Payments via the Electronic Certification System (ECS)

  ❚ Receivables via the On-line Payment and Collection System (GOALS)

  ❚ IRS 1099s

  ❚ Bulk Transfer of SF224

Global Interface Methodology

- Functional Design
- Technical Design
- Review Detail Design
- Build Components
- Unit Test
- System Test
- Install Components
- Production

OA Interface Steps

- Develop API Requirements (DELPHI)
- Coordinate API Requirements (DELPHI / OA)
  - FRA Target Date - July 1999
  - Other OA's - TBD
- Design / Build Components (OA)
  - Assumption - 13 weeks / Object
- Test Components (DELPHI / OA)
  - Minimum - 4 weeks / Object
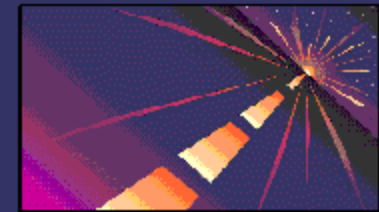- Production
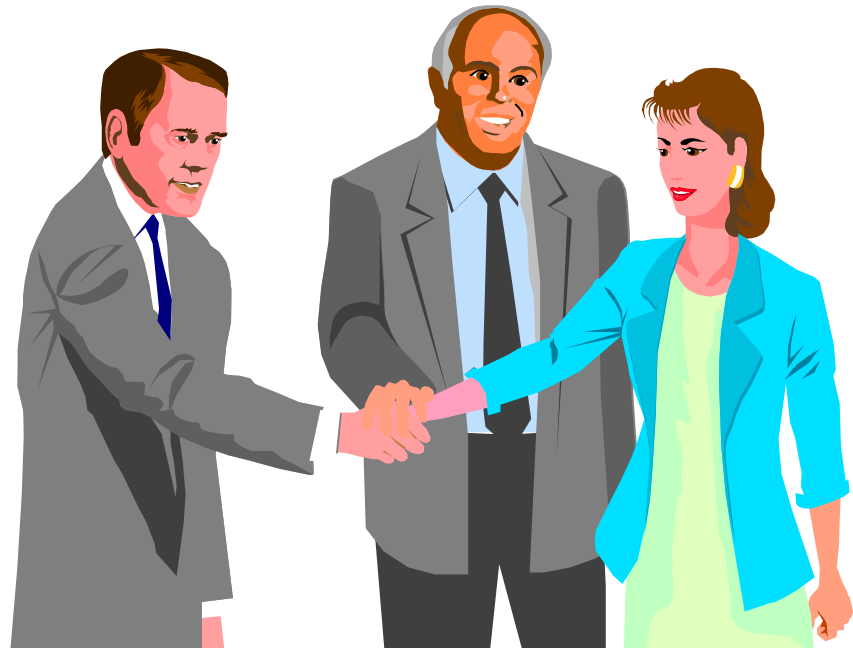
DELPHI Support for OA Processes

Questions and Answers

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  - http://www.delphi.jccbi.gov/

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